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# Electroweak Dumbbells and their dynamics

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The "electroweak dumbbell"consists of a magnetic monopole and an antimonopole of the standard electroweak model connected by a string made of Z-magnetic field. The dumbbells formed during the epoch of electroweak symmetry breaking in the early Universe undergo annihilation, and leave behind cosmological relic magnetic fields. Electroweak dumbbells may also be produced in scattering experiments and their lifetimes could have important implications for high energy experimental searches for monopoles. We have studied the structure of static electroweak dumbbells using "constrained relaxation"for a range of separations and twists, and find that dumbbells with a twist have a novel magnetic field structure. Finally, we will use the field configuration provided by our relaxation method to study the dynamics of rotating dumbbells and their lifetimes.

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